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Coaches’ perceptions of decision making in rugby union

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Abstract

Background: In team games situations, the ability to make fast and accurate decisions is crucial to performance. As such, effective decision making, characterised by the consistent and efficient ability to choose the right course of action at the right moment, is a key component of match performance in team sports such as rugby union. Previous research has identified pedagogical approaches to enhance decision making. However, there is dearth in research to investigate how coaches evaluate tactical decision making and subsequently develop context specific 'on' and 'off-field' coaching practices to improve it. Further, the value coaches place on decision making is under explored.

Purpose: The aim of this study was to explore coaches' perceptions of decision making in rugby union. The specific objectives to meet this aim were to: i) Explore coaches' perceptions of the value and importance of decision making in rugby union; ii) Identify coaches' opinions of the key decision making moments in games and how to evaluate them; and iii) Investigate coaches' on and off field methods for improving players' tactical and strategic decision making

Participants: Purposive sampling was used to select five male coaches, whose ages ranged from 25 to 41 years, from a regional rugby union club in Wales to participate in the study. Coaching experience ranged from two years to 16 years.

Methods: The interpretative paradigm was used within the study with data collected through semi-structured interviews with academy rugby union coaches. This type of interview gathered rich, detailed and complex accounts of coaches' opinions of players' in-game decision making in rugby union in order to inform practice and theory. Inductive and deductive qualitative thematic analysis was used to analyse and interpret the data.

Findings: All five coaches agreed that decision making was a crucial part of the modern game of rugby union. There was some disagreement between them about the players' autonomy to make their own decisions on the pitch and a general lack of clarity between 'game plan', 'strategy' and 'tactics' amongst the coaches. All the coaches agreed that the process of evaluation of players' decision making should involve a joint discussion with the players. They also agreed that developing decision making was one of the hardest things to coach. Finally, they used a variety of 'on' and 'off-field' coaching methods to achieve this including video analysis, questioning and the use of games based scenarios.

Conclusion: This study acquired the coaches' voice on players' decision making in rugby union by exploring its perceived importance to them and how they evaluated and attempted to improve it. A clear attempt was made among the coaches to develop a 'non-judgemental' atmosphere in the evaluation and improvement of players' decision making. Future research should consider the use of explicitation interviewing, where the interviewer (coach) aims to get the player into a state of evocation, to relive the key decision making moments in an attempt to improve it.

Key Words: Decision making, rugby union, coaching practice.

62 **Introduction**

63 Team games are a source of uncertainty and unpredictability for the players (Passos, Araujo,
64 Davids, & Shuttleworth, 2008). At regular moments during the game, players need to select
65 the most appropriate response from a range of possible options to outwit the opposition, or
66 achieve a specific goal (Abernethy, 1996; Grehaigne, Godbout, & Bouthier, 2001). In such
67 complex situations, the ability to make fast and accurate decisions is crucial to performance
68 (McGuckian, Cole, & Pepping, 2018). As such, effective decision making, characterised by the
69 consistent and efficient ability to choose the right course of action at the right moment, is a
70 key component of match performance in team sports such as rugby union (Grehaigne *et al.*,
71 2001).

72 Rugby, consistent with all team games, is considered to be a complex and constantly
73 changing environment, composed of multiple components that require individual and context
74 specific decisions (Passos *et al.*, 2008). Factors such as time, score, situation on the field, and
75 location of team mates and the opposition influence the decision-making process (O'Connor
76 & Larkin, 2015). Being attuned to situation specific, perceptual information then, is the
77 foundation for skilled decision making in rugby (Passos, *et al.*, 2008).

78 In-game decision making in team sports such as rugby is dependent upon the
79 technical, tactical and strategic demands of the evolving game-play (O'Connor & Larkin,
80 2015). Bouthier (1988) and Mouchet (2014) differentiated between strategy and tactics. For
81 them, strategy refers to the plan or action guidelines decided upon prior to the game,
82 whereas tactics are voluntarily executed during the game in order to adapt spontaneously to
83 the opposition and the requirements of the ever-changing situation. Similarly, according to
84 Grehaigne and Godbout (1995, p. 491):

85 *Strategy refers to the elements discussed in advance in order for the team to organise*
86 *itself. Tactics are a punctual adaptation to new configurations of play and to the*
87 *circulation of the ball; they are therefore an adaptation to the opposition.*

88 There is, therefore, a fundamental difference between strategy and tactics from a time-based
89 perspective, with tactics operating under strong time constraints (Grehaigne, Godbout &
90 Bouthier, 1999). During game play, especially for players near the ball, tactics are paramount
91 since they are based on successive decisions taken according to the evolution of the game
92 (Grehaigne *et al.*, 1999).

93 Bouthier (1988), based on the work of Deleplace (1979), made a further distinction
94 between the unfolding of a ‘set-play’ (static phase) and tactical decisions in unexpected
95 (open/adaptive) play. He refers to a ‘set-play’ as a ‘schema of play’; a pre-established
96 programme of actions, linked in a specific order and set in motion by a given signal (often
97 referred to as a ‘set move’ in rugby). Tactics, on the other hand, build up during the action
98 and alter the player’s perception according to the situation; *‘the player’s ‘own operating*
99 *system during play’* (Grehaigne *et al.*, 1999, p. 167).

100 Given the importance of good tactical decision making in team games such as rugby,
101 researchers have sought to explore and identify the best strategies and learning
102 environments for improving it (O’Connor, Larkin, & Williams, 2017). The use of inquiry-based
103 approaches such as Game Sense (de Duyn, 1997) and Teaching Games for Understanding
104 (Bunker & Thorpe, 1982) have been shown to enhance players’ decision making, strategic and
105 tactical understanding (Light & Evans, 2010; Pill, 2012), although there is some confounding
106 opinion about the meaning of strategy and tactics in these papers (Grehaigne *et al.*, 1999).

Specific approaches to improve tactical decision making include the use of video-based methods to enhance perceptual-cognitive processes (Starkes & Lindley, 1994). However, such methods have been criticised for having poor ecological validity, the extent to which the task replicates the natural game environment (McGuckian *et al.*, 2018). In response to this criticism, more ecologically valid coaching approaches that take the interaction of the player and the environment into consideration, have been advocated in team sports (O'Connor *et al.*, 2018). Such approaches include a greater focus on questioning and problem-solving approaches to improve players' 'in the moment' tactical decision making by stimulating players' higher order thinking (Mouchet, 2015; Partington & Cushion, 2013) and are therefore favoured in this study. Other approaches used in rugby and other team games include the use of video in player meetings to facilitate player deconstruction and learning; video simulation combined with questioning around the available options; and game observation with predictions about the decisions players make (O'Connor & Larkin, 2015).

Knowing how coaches understand decision making may provide useful insights for interventions to improve it (O'Connor, et al., 2018). Indeed, these authors argue that a logical and necessary first step in developing players' tactical decision making is to understand how coaches perceive, value, and conceptualise it and how they attempt to create learning environments that improve it. In their recent article, they adopted a phenomenographic approach to examine how elite coaches conceptualise decision making and its development in association football. Phenomenography takes a second-order approach by evaluating people's understanding of a phenomenon (Marton & Booth, 1997). This approach explores '*the different ways that individuals experience, interpret, understand, apprehend, perceive or conceptualise various aspect of reality*' (Marton, 1981, p. 178).

O'Connor et al. (2018) used semi-structured interviews to explore coaches' conceptions of decision making in team games and its development in players. Their conceptions of decision making included players needing to predict what happens next, based on their game knowledge, and to collaborate with team mates both on and off the ball, in a constantly changing environment. Coaches' conceptions of how decision making could be developed included: playing regularly with others; effective communication; balancing structure and autonomy; knowledgeable inspiration from other players and coaches; and a focus on improvement rather than winning. O'Connor *et al.*'s (2018) study is rich in insight into the pedagogical approaches to enhance decision making. However, how coaches evaluate tactical decision making and subsequently develop context specific 'on' and 'off-field' coaching practices to improve it were not specifically identified. Further, whilst the findings on coaches' conceptions of decision making were very informative, the value they placed on decision making was assumed and not explored. O'Connor *et al.* (2018), conclude by suggesting that further research is needed to answer the questions of how to better understand coaches' perceptions of decision making and create an effective learning environment to promote it. In response to these questions, with the identified limitations of previous research in mind, the aim of the present study was to explore coaches' perceptions of decision making in rugby union. The specific objectives to meet this aim were to:

1. Explore coaches' perceptions of the value and importance of decision making in rugby union;
2. Identify coaches' opinions of the key decision making moments in games and how to evaluate them;
3. Investigate coaches' on and off field methods for improving players' tactical and strategic decision making.

Methods

To address the aim and objectives, the interpretive paradigm was used to underpin this research. It is an approach that has increasingly been applied to studies within the academic field of sports coaching (e.g. Purdy & Potrac, 2016; Thompson, Potrac, & Jones, 2015). Interpretive research is suited for exploring the complexity of the social world through studying individual experience and how sense is made of experiences and actions (Bryman, 2012). It is a paradigm, which allows the researcher to gain deep insights into individual issues within social worlds constructed by interests, emotions and values (Sparkes, 1992). The interpretative paradigm, therefore, was used within the study with data collected through semi-structured interviews with academy rugby union coaches. This type of interview gathered rich, detailed and complex accounts of coaches' opinions of players' in-game decision making in rugby union in order to inform practice and theory (Kvale & Brinkmann, 2009).

Participants

All five male coaches, whose ages ranged from 25 to 41 years, from a regional rugby union academy in Wales were purposively selected to participate in the study. During the interview period the four coaches were responsible for coaching the academy teams (U18 and U16) while two of these individuals also had roles with the senior squad. The other coach was the Director of Rugby with overall responsibility for the senior squad and academy teams. Coaching experience ranged from one year to 16 years (see Table 1). Participants were selected as they consisted of all academy coaches at the region and were individuals who were knowledgeable about coaching rugby union at age grade level and the 'cultural arena or experience' to be studied (Rubin & Rubin, 1995, p.66). This allowed for the data gathered to be specific to the aim and objectives of the research (Patton, 2002). The coaches were

approached to participate through a 'gatekeeper' at the academy known to both researchers. The ethical implications of involvement in the project were discussed and consent obtained in relation to all participants. All coaches were reminded throughout the study that their involvement was voluntary and that they were free to withdraw at any time. The Ethics Committee at the host University approved the study's protocols in this regard, while all the names used within this manuscript are pseudonyms.

Insert Table 1.

Procedure and method

Each of the semi-structured individual interviews were audio-recorded and ranged between 30 and 60 minutes. The interviews with Steve, Brian and John were conducted first and the following with Rob and Mark a week later both at the club's training centre. The interviews, being semi-structured in nature, allowed the researchers to specify a framework of questions driven by the study's aim and objectives whilst remaining free to probe beyond the immediate answers given. An interview guide was used by both interviewers based on themes emerging from the literature (Kvale & Brinkman, 2009), focused on: a) coaches' opinions of the importance of player decision making; b) factors that influence tactical decision making; c) their understanding of game plan, strategy and tactics; d) how they evaluate decision making; and e) their on and off-field methods to improve it. Initial questions focused on coaching background and were open and general, allowing the participant to be descriptive and to build rapport. This also allowed the interviewer to demonstrate firm knowledge of the subject, which is essential in interviews with individuals' to gain symmetry in the interview relationship, gain credibility and increase rapport (Kvale & Brinkmann 2009). The more searching 'how' and 'why' questions were kept for later in the interview or for when it was an

appropriate time to ask (Cohen, Manion & Morrison, 2011). The data was stored securely in accordance with host University's data storage procedures and the Data Protection Act (1998).

Data analysis

All interviews were transcribed verbatim by a professional transcriber to ensure a complete record of the data and coaches were given the opportunity to check the transcriptions. Initial deductive pre-coding of the data was conducted, based around the questions and key concepts from the decision making literature (Aurini, Heath, & Howells, 2016; Saldana, 2013) (e.g. how important is player in-game decision making in the modern game? What factors influence players' decisions?). In the first coding cycle, several descriptive codes were identified under each of the pre-codes, to describe chunks of data in a way that captured the main essence of them (Miles, Huberman, & Saldana, 2014) (e.g. degree of importance; constraints on players' decision making in games). Coded segments were then collected for more detailed second cycle coding by condensing and integrating the first cycle codes into broader and more coherent categories and themes (Aurini *et al.*, 2016; Miles *et al.*, 2014). Some of the themes and categories were similar to the pre-coded themes, but others were generated more inductively out of the data analysis (e.g. importance of decision making (similar to pre-coded theme); players' autonomy to make decisions (inductive theme)).

The criteria for judging this qualitative study is informed by a relativist position, where evaluation is considered through a list of characteristics as opposed to a preordained and universal standard (Sparkes & Smith 2009). This approach allows the readers to draw their own conclusions in terms of the quality of the research by considering characteristics such as;

223 the worthiness of the topic; the rigour applied in the collection and analysis of data; the
224 credibility of the researchers; and the potential contribution of the work.

225 **Results and Discussion**

226 This section will present and discuss the results structured around the main themes and
227 categories that were generated in the second cycle of coding, namely, the importance of
228 player decision making and the factors that influence it, player autonomy to make decisions,
229 inconsistency in coaches' terminology, evaluating player decision making, and how to
230 improve player decision making.

231 ***Importance of player decision making and factors that influence it***

232 As suspected, but previously unsubstantiated in the research, all five coaches agreed that
233 decision making was a crucial part of the modern game of rugby union with some suggesting
234 that it was the most important element and what sets certain players apart from others, e.g.,
235 according to Rob:

236 *I think it's probably the key area of the game, really—for me, anyway. Especially at the*
237 *moment, everyone is getting physically as good as anyone else, really....I think what*
238 *can set someone apart, is the ability to make decisions under pressure.*

239 The coaches were also in agreement that decision making was vital in all aspects of the game:

240 *It's massively important. I think it affects every aspect of the game to be honest, not*
241 *just attack and defence but even at set piece you know, even that individual at*
242 *moments like a ball carrier going to ground and whether he presents the ball*
243 *immediately or whether he takes another roll or how he falls. (John)*

244 There was a general acceptance among the coaches that players need to react to
245 different decision making demands as the game develops, e.g., *'the game is often about what*
246 *they see and how they react to a changing picture'* (John), and a high value was placed upon
247 *'players who can change the course of a game'* (Brian). Players' ability to read situational
248 factors in games was, therefore, an important consideration.

249 Two of the coaches in particular felt that there were certain areas of the pitch where
250 decision-making became more important. As Brian suggested: *'I think the elevations of*
251 *alertness and decision making vary on the pitch in certain areas'*. John agreed:

252 *Yes, I think the big areas are their 22 and your 22. When in your own 22 generally*
253 *you're looking to move up the field and you have a choice whether you kick or run, or*
254 *carry, and then where do you kick, do you kick it off? Do you keep it on the field to*
255 *contest the ball? And then when you get into their 22 obviously their defensive line is*
256 *stronger because they don't have anyone in the back field*

257 Although all the coaches agreed that *'decision making is happening all the time'*
258 (Steve) in games, there was also a consensus that there were key moments when it became
259 more important to make good decisions. According to Brian, *'the game is predominantly*
260 *played in the unstructured phases, so your decision making has to be good in that environment*
261 *[.....] a heightened alertness is needed.'* John, suggested that there were certain stages of the
262 game when decision making was more important: *'it's important to start well, you know, to*
263 *leave your imprint on the game, and then obviously just before half time, if you can be clinical*
264 *then it often helps the end of the game.'* Rob agreed and combined this with a focus on the
265 area of the field: *'You're looking at time: What's the time? You're looking at the clock; you're*
266 *looking in the area of the field.'*

267 According to Steve, the positioning of the opposition defence was also an important

268 factor to consider in the decision making process:

269 *I think it's not so much areas of the field but the opportunities, so say if you've got –*
270 *for example your outside half kicking in open play, are we kicking for kicking's sake or*
271 *are we looking at the back field and seeing where their wingers are?*

272 In addition, Mark felt that '*decision-making gets a lot harder as the game goes on because*
273 *you're under fatigue.*' He went on to say:

274 *When you're fresh, when your body's not under fatigue it's easier to make the right*
275 *decision. When your body's under more stress and fatigue, you're less likely to think,*
276 *and your body's a lot slower, so your mind sort of follows it, I suppose. (Mark)*

277 Further influences on players' decision-making during games that the coaches
278 identified were; players' individual technical abilities; and the weather conditions. Mark gave
279 an example of how he thought players' self-awareness of their abilities impacted on their
280 decisions:

281 *For example, we've got one player who makes the right decisions with regards to*
282 *things like attacking kicks and stuff, but his kicking's not very good, so sometimes,*
283 *when it's on his weak foot, because he's not comfortable in his own ability to produce*
284 *the kick it influences his decision.*

285 For this same coach, and the others, the weather and playing conditions also affected
286 decision-making:

287 *The conditions, yeah. Obviously, we're playing in Wales, and our block of games now*
288 *is January and February, so the weather's going to be poor; it's going to be wet and*

windy and cold.....and the surfaces we play on - you have to sort of completely change your game plan, based on where you're playing and the pitch conditions.

The findings on the importance of player decision making adds a new perspective to the research of Grehaigine *et al.* (2001) by gaining the coaches' voice, something that has been missing in previous research. Having the coaches' perceptions is important so that researchers do not simply assume the importance of decision making. In congruence with O'Connor & Larkin (2015), factors such as time, score, situation on the field, and location of team mates and the opposition were considered by the coaches to influence the decision making process. In addition to the findings of previous research, the coaches identified the impact of the prevailing weather and playing surface conditions as important factors in players' in-game decision making. Further, new knowledge was generated around the importance of the players' individual technical abilities and their level of fatigue at different times during the game in the decision making process. These last two factors have significant implications for the development of players' technical skills through the use of pedagogies that place them 'under pressure' in game related situations (Light, Harvey, & Mouchet, 2014) and the design of training sessions to replicate the levels of fatigue that players experience in games.

Player autonomy to make decisions

There was some disagreement between the coaches about the players' autonomy to make their own decisions on the pitch. When John, the director of rugby, was asked about whether there were constraints placed on the players to make decisions by the coaches, he replied, 'We try not to (set constraints). We try to give them the freedom to express themselves and I think that's important for them.' However, Brian, the most experienced coach, disagreed and

312 favoured a more structured approach where players were coached to play within a relatively
313 tight framework and game plan:

314 *I think there will always be constraints obviously because it depends on if you've got a*
315 *framework and 90% of the people are working to a framework, there again if people*
316 *make individual decisions within that framework of course that is key. But for example*
317 *if 3 or 4 are going off on different things, then what it does to everybody else, it causes*
318 *a complete mish-mash, with me going well I know at this point in time I want to give a*
319 *pass to somebody else. But where were you? Where've you gone? Kind of thing.*

320 Steve, who was still playing at the time of the interviews, fell between these two opinions,
321 suggesting that:

322 *I think there are a few little constraints sometimes, so we try to limit them as much as*
323 *possible, but you do give them certain boundaries [.....] during a kicking battle we*
324 *always said if you can get back to the halfway line by running it, then keep the ball. If*
325 *you can't get to the halfway line, then look to kick for territory or kick to regain, so that*
326 *is a sort of constraint.*

327 These findings provide new knowledge around coaches' perceptions about the level
328 of control they have over their players' decision making in training and during games, and the
329 dialectical relationship between structure and agency in team game. Empowering the players
330 by providing them with choices and a sense of ownership over the tasks they are participating
331 in is believed by some to enable them to feel a greater level of autonomy, resulting in greater
332 tactical and technical understanding and higher levels of commitment and motivation
333 (Kidman, 2001; Light 2004). However, others have argued that empowerment is more of an
334 illusion created by the coach to 'orchestrate' the environment, and that shared leadership is

more of a realistic portrayal of the coach-athlete relationship (Jones & Standage, 2006; Jones & Wallace, 2006; Santos, Jones, & Mesquita, 2013). Such shared leadership was alluded to by the coaches in this study, particularly Brian and Steve in the aforementioned quotes above which implied a level of collaboration between coaches and players, where a framework or boundary was set by the coaches but the players had a level of autonomy to choose options within it (Jones & Standage, 2006).

Despite some of the coaches claiming that they tried not to control the players' decision making in games, clearly there is a need for players to act in an individual way that others can make sense of and react to effectively, to maximise the emerging opportunity and outwit the opposition. This relates well to collaborative creativity (Sawyer, 2012). Drawing on Sawyer's principles of collaborative creativity, based on mutual understanding and participation, and Seddon's (2005) concept of emphatic attunement in jazz, Santos and Morgan (2019), argued that team games players can be coached to creatively support and react to each other's in-game actions. However, in order to successfully achieve this, ideally, there should to be mutual understanding of strategy and tactics (Bouthier, 1988), something that was not fully evident in this study as revealed in the next section.

Inconsistency in coaches' terminology

There was a general lack of clarity between 'game plan', 'strategy' and 'tactics' amongst the coaches in this study. For example, according to Steve, '*We have basic game plans, the way we want to play, for example we played [.....] who are traditionally a big pack of forwards, so we worked out a pretty decent plan.*' This interpretation was very similar to Brian's understanding of strategy: '*You have a strategy which you have applied in readiness for a particular game or a particular opposition*' (Brian). For others, however, strategy was more

358 specific than game plan, e.g., *'For us we'd obviously try and develop a good strategy for the*
359 *game and that would help hopefully to give the players some strong information on where the*
360 *space or opportunities might lie.'* (John)

361 Similarly, there was ambiguity and disagreement over the meaning of 'tactics'. For
362 example, Mark asked: *'Tactical, would that be game plan decision-making? Is that what you*
363 *mean?'* Similarly, Steve gave a definition of tactics that sounded more like an overall game
364 plan:

365 *A specific tactic of that was that we didn't want to kick the ball out off the field,*
366 *because they've got a big maul, so we wanted to keep the ball in play as long as*
367 *possible and limit the number of line-outs we gave them to stop them getting a driving*
368 *game going.*

369 The inconsistency around the coaches' understanding and use of decision making
370 terminology is a new finding in this area of research and was further emphasised when they
371 were specifically asked if they saw a difference between the terms 'strategy' and 'tactics'. This
372 led to various responses, such as: *'Not really, I know there's a difference in words, but it*
373 *depends on how you look at the words, how you perceive it. For me, they're very similar I*
374 *think.'* (Brian), and then later in the same interview: *'So this is my strategy beforehand, then*
375 *tactically within the game, we need to adapt stuff.'* Other coaches were also unsure, e.g. *'No,*
376 *not really. Just taking them literally, strategical and tactical you can take what you want out*
377 *of them. Tactical decision-making, would that be kind of on the go, maybe?'* (Rob), and
378 similarly from Mark: *'Oh okay. Strategic decision-making and tactical decision-making. I think*
379 *it sort of all just comes under one bracket.'*

Despite a lack of consistency in their used terminology of strategy and tactics, the coaches did seem to understand the need for, and the different demands placed upon the players by, pre-planned 'set moves' and 'in the moment' decision making. Pre-planned moves were commonly used by all the coaches, in addition to different options that players could decide upon within the moment of the game depending on the opposition. For example: '*We run certain starts of plays, which are all pre-planned, but then they have different options off them, so it's up to the players running the lines to make those decisions.*' (Mark).

Regarding Bouthier (1988) and Mouchet 's (2014) definitions of strategy and tactics, therefore, coaches were not clear on the differences in terminology but in practice they were seemingly able to differentiate between them. On the face of it, this may appear perfectly acceptable but this lack of consistency in the language used by the coaches amongst themselves and with the players has potential to cause confusion in player learning and decision making and inconsistency in coaching approaches to improve it. For example, if coaches use the word tactics to represent both 'pre-planned' moves and 'in the moment' adaptations to the opposition, then players may not understand the different demands on their own operating system (Grehaigne *et al.*, 1999), or the need to develop it accordingly. Further, given that different coaches often work with the same team, inconsistency in their language is likely to cause confusion in the players' minds and limit their learning.

Evaluating player decision making

All the coaches agreed that the process of evaluation of players' decision making should involve a joint discussion with the players. In the words of Steve:

It's important to have a one-to-one conversation post-game, see why they made that decision, because I think you have to enter their mind, their brain, if you like. That to me is very much the relationship building that you have to have with a player and the

404 *confidence they have with you about being able to have conversations and being*
405 *comfortable in those conversations.*

406 Verbalising the general consensus of all the coaches, he went on to talk about being
407 *'accepting of their thoughts'* and *'creating a safe environment for the players'* and was
408 adamant that *'me constantly giving them the answer will never work long-term for helping*
409 *the decision making process when they play the game.'* He also felt that *'it's difficult to say*
410 *whether the decision is right or wrong until you ask them [.....] I think that's really important'.*
411 The co-construction of knowledge through the use of questioning, by the coach as the more
412 knowledgeable other (Vygotsky, 1978) was, therefore, a key feature of these shared
413 evaluation sessions as demonstrated by Mark:

414 *With the reviews I do, I'll just question the players, not just what they've done bad, but*
415 *when they make a good decision as well. "What makes this a good decision? Why have*
416 *you passed? Why have you carried? What's helped you to do that?*

417 Such 'Why'? questions, despite good intentions, can be perceived as judgemental by the
418 interviewee (Mouchet, Morgan, & Thomas, 2018). In contrast, Mouchet *et al.* (2018) suggest
419 the use of explicitation type questioning, first developed by Vermersch (1994) as a form of
420 introspection, preferring questions that begin with 'How' and 'What'.

421 There was a strong reliance amongst all of the coaches on performance analysis in the joint
422 evaluation process and on reviewing the decisions made in games with the players using video
423 technology:

424 *I sort of do it (the evaluation of decision making) as more of a discussion with the*
425 *players while showing them on the screen what we've recorded from various*

426 *different angles. Without technology, it would be a lot more difficult to review and*
427 *talk about.....We're lucky all our games get filmed at different angles, so you can*
428 *see things that perhaps you wouldn't see while you're watching the game live or if*
429 *you only have one angle. We've got an end-on view and three or four different angles*
430 *sometimes, so we can see things from a different perspective. (Mark)*

431 Despite this pervading technology culture and the fact that all of the coaches were
432 required to use it, Rob, expressed some personal concerns about the over reliance on it: *'I'm*
433 *not really stats-based at all. I kind of would like to back my own decision, really.'* This
434 highlighted different perspectives amongst the coaches about their reliance on performance
435 analysis technology to evaluate players' decision making.

436 The criteria the coaches used to evaluate whether a decision was successful or not
437 was primarily based on outcome, as Mark identified:

438 *The players know that we're trying to score, first of all; secondly, we're trying to break*
439 *the line; thirdly, we're just trying to go forward; and, fourth, we're just trying to keep*
440 *hold of the ball. They sort of know themselves.*

441 However, there was also a consensus amongst the coaches that the outcome wasn't always
442 the best way of evaluating successful decisions, as exemplified by Brian:

443 *Maybe the outcome is wrong, but it's what the process is in their mind.....So the*
444 *outcome becomes last almost because sometimes we put – oh yes, we scored the try*
445 *or we made a 50-60 metre break, but was there a better option?*

446 The coaches, therefore, had different criteria for evaluating the success of player decisions.
447 Brian, who was a 'skills coach', set skill specific criteria for some in-game decisions. For

448 example, in relation to 'off-loading' a quick pass out of contact situations, he would get the
449 players to think about criteria such as, *'Can I get my hands free to reach towards the player?*
450 *Can I see the player? If you can't see the player then that offload shouldn't be thrown.'*
451 Similarly, from a defensive perspective Rob identified that: *'The decision making is who goes*
452 *low, who goes high, and where you set up, opposite'*. This made the evaluation of decision
453 making more objective and easier to observe and evaluate for coaches and players.

454 The coaches also had different experiences in identifying and agreeing upon the
455 criteria for successful decisions with the other coaches. According to Steve, *'You discuss it*
456 *with the other coaches especially as it aligns with the strategy and tactics in a particular game*
457 *or in a particular moment.'* However, John said, *'No, it's down to individuals'* and Rob agreed,
458 stating that *'No, it's just me and the guy who helps me with my stats.'* Furthermore, even
459 when coaches did get together to do a joint review and evaluation, there was not always
460 agreement as, in the words of Steve:

461 *It comes down to individual perceptions. So I may say 'he should have passed the ball'*
462 *and another coach may say 'No, I think it was the right decision because if you looked*
463 *at it, did you see this or this?*

464 In such circumstances, John suggested that, *'As head coach I take the lead on it. So if I say,*
465 *this is the kind of outcomes we are looking for, this is how we can get there then that generally*
466 *leads the way.'* This demonstrated a type of power hierarchy amongst the coaching staff when
467 it came to setting the criteria for successful in-game decisions by the players.

468 The coaches were in general agreement that their judgement of decision making
469 success was primarily based on their own previous or current playing and coaching
470 experiences, as Brian suggested, *'From a coach's perspective it's probably the experiences*

471 *you've gained over the years. You can probably see the picture as it's unfolding [....] I have*
472 *that information in my mind.'* John concurred, stating that *'basically it's my experience of the*
473 *game and hopefully explaining to them what I would like to happen and what cue they should*
474 *be looking for.'* This suggests that having playing experience, to at least the level they were
475 coaching at, was considered important by both coaches and players in this particular coaching
476 environment.

477 Finally, in relation to evaluation, there was an awareness amongst the coaches that
478 decision making 'off the ball', as well as on it, was a crucial aspect to consider. In the words
479 of Steve:

480 *That's another big decision-making issue, trying to get people to communicate – see*
481 *where the space is quickly, see what the picture is and it might not be the guy who's*
482 *actually got the ball – we're trying to get outside players to see space, communicate it*
483 *and then let that guy make his own decision.*

484 Most decision-making research to date has focused on the person in possession of the
485 ball. Concentrating on 'off the ball' decision makers would link well with collaborative
486 creativity (Sawyer, 2014) where players develop mutual understanding to read each other's
487 moves and are emphatically attuned to anticipate the best option to continue the emergent
488 play (Seddon, 2005; Santos & Morgan, 2019). Such an approach would build upon O'Connor
489 *et al.*'s (2018) conception of decision making which included players' abilities to predict what
490 happens next and to collaborate with team mates both on and off the ball, in a constantly
491 changing environment.

492 The findings in relation to the process of how to evaluate players' decision making,
493 outside of the game situation were closely associated with the earlier discussion around

shared leadership in decision making, which promotes athlete choice within limits identified by the coach (Jones & Standage, 2006). In such situations, athletes can be considered relatively autonomous, but still influenced by the coach, as the more knowledgeable other (Vygotsky, 1978), who sets the boundaries within which the athletes are allowed to partake (Jones & Standage, 2006).

The judgemental aspect of 'Why' questions, as opposed to the use of 'What' and 'How' type questions promoted in explicitation style interviewing is an important consideration for evaluating and developing player decision making (Mouchet *et al.*, 2018). This type of questioning involves finding information in oneself that is largely invisible until it has been brought into reflective consciousness by the interviewer. However, coaches would need to be specifically trained in this interviewing technique to use it effectively with players in both off and on-field situations (Mouchet *et al.*, 2018).

Consistent with the findings of O'Connor and Larkin (2016), there was a strong reliance amongst all of the coaches on performance analysis in the evaluation process and on reviewing the decisions made in games with the players using video technology. Given the dominance of this type of video analysis in all invasion games sports nowadays, exploring how this impacts on the coaches' confidence in their own abilities to make 'in the moment' evaluations about players' decisions, previously considered as an important coaching skill and part of the 'craft of coaching' (Mouchet & Duffy, 2018), is an interesting area for future research. Further, the difficulty in accurately evaluating player decision making, where the outcome needs to be assessed in terms of the effect of the decision made and the execution of skills, is not to be underestimated and further research is required in this important area.

How to improve player decision making

517 The coaches all agreed that developing decision making was difficult, In Rob's words: *'I think*
518 *it's one of the hardest things to try to coach really, because there is so many other intangibles*
519 *going on, there's so much information to try to make a player a good decision maker.'* The
520 following sub-sections identify how they attempted to do this using both on and off-field
521 coaching methods.

522 ***On-field coaching approaches:*** All of the coaches agreed that training to
523 improve decision making needed to move away from traditional 'drill based' sessions to
524 'games based' scenarios, as identified by Steve:

525 *We don't train much on specific moves or specific set plays, a lot of it is down to*
526 *creating rugby chaos, and then putting boys into repeated situations where we've got*
527 *a framework but it's down to the players then to choose which option they want to*
528 *run, especially in attack.*

529 The rationale for this change was based on the previous failure of 'drill based' sessions to
530 develop learning and independent decision makers in games. As John put it:

531 *When we go to club rugby sessions, you still see them doing drills for drills' sake and*
532 *kids aren't really responding, they're not making decisions, they're just doing a drill*
533 *because they've been told to do a drill. Whereas they need to learn, and that's where*
534 *a lot of small sided games come in – it builds their experience bank because if you get*
535 *lots of repetitions in small-sided games where they haven't got someone telling them*
536 *specifically to do certain things all the time, they've got to react and do it themselves.*

537 However, there was an acknowledgement by some of the coaches that this 'chaotic
538 approach wasn't always easy to implement in practice, which might put coaches off using it:

539 *It's a difficult one because your training session sometimes looks a mess. For me, when*
540 *I first started doing it, unless we had 100 percent success, I'd think I was doing*
541 *something wrong or it was too hard, but I've sort of just grown to realize that it's okay*
542 *to have a mess. (Mark)*

543 However, despite these challenges, the coaches agreed that putting players under pressure
544 to replicate game situations was key to developing their decision making, as Mark verbalised:
545 *'The stuff we do in training, like playing from everywhere and putting teams under pressure,*
546 *we felt it really did show when we played games.'* This increase in pressure, however, came
547 with a greater risk of injury as acknowledged by Steve: *'It's hard, especially at this level to*
548 *replicate too much pressure, because obviously there's the risk of injury.'* The pressure theme
549 was also closely associated with fatigue by Steve and Mark in particular. In the words of Steve:
550 *'Everyone makes good decisions, everyone executes good skills when you're 100% fresh and*
551 *not under pressure. Under pressure of fatigue and under pressure of defence is when you learn*
552 *how to execute them.'*

553 There was a definite move within this group of coaches to focus more on questioning
554 the players about their decision-making during training sessions, rather than telling them
555 what they should do. As Steve put it: *'We've come up with this philosophy called 'No tell' so*
556 *we're not allowed to tell players certain feedback of what we think they've done wrong or*
557 *what they should be doing.'* The value of this type of questioning approach, according to the
558 coaches, was to get the players to think more about their decisions, as John suggested: *'You*
559 *pose a question on the pitch and then we all work from there and I can definitely see players,*
560 *when it gets to that point in time, they're thinking 'I'm on it.' They're subconsciously thinking*
561 *about it.'* Steve explained this in more detail, whilst acknowledging his own fallibility and that

562 it is a difficult thing to do as a coach:

563 *it's quite hard as a coach because you've got to do a lot of role play, ask questions and*
564 *try to get a level of understanding out of them. But it is interesting because if you can*
565 *try to get them to think, about those decisions they've made and if they could do it*
566 *next time, what could I possibly do better? What possibly could I do differently,*
567 *without me going 'You should have done this.' Because me telling him he should have*
568 *done this doesn't really help that player grow, and I could also be wrong.*

569 All of the coaches agreed with the necessity of players making mistakes in training
570 sessions to improve decision-making, as exemplified by John:

571 *I think its important that we create the type of environment in training so that they*
572 *feel that they can try things, but also do the skill blocks to try and make sure they have*
573 *the skill to do it.*

574 Mark agreed, providing more of a rationale:

575 *Yeah, uncertainty of failure. We talk about building failure into training. Uncertainty,*
576 *we'll throw in different balls. We'll go from playing with a rugby ball to a football all*
577 *of a sudden, which starts as chaos, and you've got to deal with a lot of error. Because*
578 *you've got to have some sort of failure in order for you to learn.*

579 This approach is related to 'differential learning' which uses random variability in allowing
580 players to acquire new and functional movement patterns and unleash their creativity
581 (Santos, Coutinho, Gonçalves, Schöllhorn, Sampaio, & Leite, 2018). Within the differential
582 learning approach, players are instructed to actively perform movement errors, instead of
583 avoiding them, to promote constant adaptations (Santos, *et al.*, 2018). However, it is worth
584 reminding ourselves that these coaches were working in a Development Academy

585 environment, as Mark alluded to: *'It's nice to win, but we're not too bothered about that.*
586 *We're bothered about producing the next professional player, so if they're making mistakes*
587 *but learning from them, then that's okay [.....] mistakes are okay; that's how you learn.'*

588 This focus on improvement rather than winning was similar to the findings of
589 O'Connor *et al.*'s, (2018) research with elite senior and youth soccer coaches in Australia.
590 However, such a luxury, of not being overly dependent for one's professional security based
591 on the results of games, is not common amongst professional senior sport coaches in the
592 modern era. Indeed, it could be argued that this may be one of the main reasons why coaches
593 revert to tried and tested methods of coaching instead of becoming more adventurous and
594 creative in their coaching practice.

595 The 'on field' approaches adopted by this group of coaches were consistent with the
596 use of inquiry based approaches such as Game Sense (de Duyn, 1997) and Teaching Games
597 for Understanding (Bunker & Thorpe, 1982). Indeed, the emphasis in training on whole game
598 situations, where players attempted to manage chaos and disorder in the face of opposition
599 to make 'at-action' decisions, is closely associated with Light *et al.*'s (2014) promotion of
600 Game Sense pedagogy and complex learning theory (CLT) to improve player decision making.

601 ***Off-field coaching methods:*** All of the coaches relied heavily on the use of
602 post-game video analysis to attempt to improve players' decisions. The primary purpose of
603 the video was to remind the players of key decision making moments in the game and to
604 promote discussion with them to enhance it. As John reflected:

605 *We support it with video, if they don't remember it, if its vague or lacking clarity or if*
606 *they have a different point of view, you use the footage to reinforce the message. Not*
607 *just to reinforce my thoughts, it's to have further discussion.*

608 Consistent with the 'on-field' methods to improve decision making, the off-field
609 approaches also stressed a shared 'no tell' questioning philosophy amongst most of the
610 coaches in 1-1 weekly review meetings. These individual review meetings with the players
611 tended to last about 15 minutes and the coaches asked questions such as:

612 *What could we be doing here? What else is on? What other options have you got? To*
613 *try to get them to realise 'Oh, yes I could have done this', or 'I haven't looked' and to*
614 *realise their mistakes – 'I haven't checked what's in front of me, I've done it for the*
615 *sake of doing it. (Steve)*

616 The rationale for this type of off-field retrospective questioning was to attempt to get players
617 to 'relive that moment'. As John identified:

618 *I think it's just trying to get them to recollect as much as they can you know. So what*
619 *part of the field was it in? Who was on your inside? On your outside? Because we know*
620 *all our position aims so, what was X doing in defence? Who was covering? To see if*
621 *they can remember, you know.*

622 This approach has a strong connection with the explicitation technique already alluded to in
623 this paper (Mouchet, *et al.*, 2018), where the interviewer (coach) aims to get the player into
624 a state of evocation, to relive the key decision making moments in an attempt to improve
625 future decision making opportunities.

626 A crucial element of these meetings was getting the players to 'open-up' and be
627 honest with the coaches, as Brian mentioned:

628 *'That to me is very much the relationship building that you have to have with a player*
629 *and the confidence they have with you about being able to have conversations and*
630 *being comfortable in those conversations.....knowing that it's a safe environment',*

631 This was easier for some coaches than others, depending on their role within the club. John,
632 for example, was the head coach and director of rugby and openly admitted that:

633 *I think they are more likely to be honest with him (Brian the skills coach). Because I'm*
634 *head coach and because I decide their contract, their future, their selection I think*
635 *that someone a little bit further down who's not involved in selection can get much*
636 *better honesty and more interaction.....Certainly for me, when I played I would always*
637 *try and give the coach the answer he wanted.*

638 That said, the overwhelming opinion of this group of coaches was that it is crucial to listen to
639 the players perspective in relation to their decision making in games:

640 *I just sit with the player and just basically let them describe to me what their thought*
641 *process was and why they made that decision. Is it somebody else making the call? Is*
642 *it what they can see? If they're making what I perceive to be the wrong call, then how*
643 *do we go about changing that? (Mark)*

644 Other, more innovative, off-field methods that the coaches mentioned to improve
645 players' decision making were based on game scenarios that the players had to find and
646 present solutions to on the 'whiteboard' in the classroom, as Mark explained:

647 *We'll organize the boys into small groups and they'll have tasks that involve analysis*
648 *most of the time. They have to go away and look at the clips or they'll have to come*
649 *up with ideas based on a scenario we set. It might be, that we upload clips of our attack*
650 *in the game before and ask the halfbacks and backfield players and fullbacks to come*
651 *up with the things we did well, present back to the group.*

652 The coaches also encouraged players to watch more rugby games and discuss key
653 tactical and strategic decisions with other players (Brian). Such player discussions were seen

654 as a valuable learning tool: *'Sometimes we just sit back and listen, and they discuss between*
655 *themselves with some disagreements. That's good; that's what we want. For me, that's*
656 *healthy for them to be doing.'* (Brian). Finally, peer coaching was another method adopted
657 by some of the coaches to develop learning of the younger and more inexperienced players
658 in particular by using the more experienced players as mentors.

659 *The peer to peer thing is very important. There's a player here who does it with the*
660 *young players, that's – talk to the young player or sit with him watching the games.*
661 *Those things are gold, really.* (Brian)

662 These 'off field' approaches are similar to those found to be prominent in team games
663 by O'Connor and Larkin (2015) and are now commonplace in professional sport. Consistent
664 with the work of O'Connor *et al.* (2018), and Partington and Cushion (2013), there was a
665 definite move within this group of coaches to focus more on questioning. However, the use
666 of questioning among this group of coaches provides an interesting insight into the power
667 dynamic between them and players, revealing that, despite the language and rhetoric around
668 empowerment, there is still an overriding feeling that the final answer lies with the coach and
669 that it is his duty to get the players to see that perspective. Indeed, in this context the coach
670 is (or perhaps should be) viewed as 'the more capable other' (Vygotsky, 1978) mediating the
671 players' learning using shared language and 'psychological tools' through performance
672 analysis and questioning. Further, the specific role of the coach had important implications
673 for the players when it came to 'opening up' and revealing their decision making weaknesses.
674 Not surprisingly, they were more comfortable in doing this with the skills coach than the head
675 coach and director of rugby who had greater power in the selection process for games and in
676 deciding upon the players' professional contracts.

677 **Conclusions**

678 The aim of this study was to acquire the coaches' voice on players' decision making in rugby
679 union by exploring its perceived importance to them and how they evaluated and attempted
680 to improve it. In doing so, this study addressed a gap in the decision making literature and
681 provided a basis for further research on how to enhance it in coaching practice.

682 Some interesting findings revealed differences in coaching philosophy within the
683 group. Certain coaches, particularly those in more senior leadership roles, preferred more
684 control and structure, whereas others adopted a more autonomy supportive and shared
685 leadership approach with the players. This alludes to what Jones and Standage (2006) refer
686 to as an uneasy interplay between coaches' use of power, in accordance with their beliefs
687 about their hierarchy of accountability and athlete's autonomy. Whilst these differences are
688 probably to be expected amongst any group of coaches, they have implications for the
689 consistency of messages to the players and the resultant coaching approaches employed to
690 improve decision making. The results also showed an inconsistency in the terminology used
691 by the coaches for strategy and tactics compared to their definitions in previous research
692 (Bouthier, 1988; Mouchet, 2014). Developing a more consistent coaching language and
693 improving coaches' knowledge and understanding of these concepts would seem to be an
694 important implication for player learning, as without such consistency the concept formation
695 of the players will not be optimised (Vygotsky, 1978).

696 Consistent with the explicitation technique (Mouchet, *et al.*, 2018) a clear attempt was
697 made amongst the coaches in this study to develop a 'non-judgemental' atmosphere in the
698 video analysis sessions used to evaluate and improve players' decision making. This has
699 important implications for coaching practice and future research should explore the use of

explicitation interviewing by researchers and coaches to enhance players' decision making.

The use of only five rugby coaches from the same academy, interviewed on one occasion, is a limitation of this paper and further research should increase the sample and explore coaches' perceptions of decision making in different contexts and sports.

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